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Publication Date

2000-07-01



*A Policy Research Partnership
to Reduce Youth Substance Use*

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July 2000

Research Paper Series, No. 4

ImpacTeen is part of the Bridging the Gap Initiative: Research Informing Practice for Healthy Youth Behavior, supported by The Robert Wood Johnson Foundation and administered by the University of Illinois at Chicago.

Changes at the point-of-sale for tobacco following the 1999 tobacco billboard ban

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Acknowledgements

The research for this report was supported by a grant from The Robert Wood Johnson Foundation to the University of Illinois at Chicago, as part of the Foundation's Bridging the Gap Initiative. The views expressed in this research paper are those of the authors and do not necessarily reflect the views of the Robert Wood Johnson Foundation.

The authors wish to thank members of the ImpactTeen Research Group for input into instrument design, Jaana Myllyluoma and the team at Battelle Centers for Public Health Research and Evaluation for data collection, and Erin Ruel for advice on data analysis.

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Abstract

Objective—This study aimed to assess the effect of the Master Settlement Agreement’s (MSA) 24 April 1999 ban on billboard tobacco advertising on the tobacco industry’s point-of-purchase marketing strategies.

Methods—Observations were conducted from 16 February through 23 June 1999 in 3,464 tobacco-selling retail stores in a total of 191 communities across the nation. Communities were determined by the location of schools in a nationally representative sample of students in grades 8, 10, and 12 in the United States. At each store, information was collected on the extent of interior and exterior tobacco advertising, extent of tobacco functional objects, presence of tobacco promotions, and placement of tobacco and low-height advertisements. Logistic regression and cumulative logit analyses were used to assess changes in pre- and post-ban retail environments, after adjusting for store type, store size, presence of state tobacco control program and urbanicity.

Results—After adjustment for covariates, there were significant post-ban increases in the presence of tobacco sales promotions, the presence and extent of functional objects, the presence of exterior and interior store advertising, and the extensiveness of exterior store advertising.

Conclusions—The observed increase in point-of-purchase marketing in the period following the billboard advertising ban suggests that the tobacco industry may be shifting at least some of the expenditures once spent on billboard advertising to the advertising and promotion at the point-of-purchase. To the extent that this is so, the intended effects of the MSA billboard ban may not be fully realized.

Introduction

Point-of-purchase tobacco marketing strategies have become an increasingly important component of tobacco industry efforts to market tobacco in the United States. According to figures from the Federal Trade Commission (FTC), domestic cigarette advertising and promotional expenditures increased from \$2.58 billion in 1987 to \$5.66 billion in 1997, the most recent year reported (FTC, 1999). Spending on point-of-purchase strategies between these years rose from \$856 million (33% of total expenditures) in 1987 to \$2.74 billion (48% of total expenditures) in 1997 (FTC, 1999). In the wake of the 1998 Master Settlement Agreement (MSA) that required tobacco advertising on billboards across the country to end on 24 April 1999, the point-of-purchase environment is likely to assume even greater importance in the tobacco industry's marketing efforts.

The billboard advertising ban, as well as the other limits on cigarette company advertising and promotion contained in the MSA, were included, in part, in an effort to reduce youth exposure to cigarette advertising. Previous research, however, suggests that the tobacco industry is able to compensate for its inability to advertise in one medium by transferring advertising dollars to other marketing activities. As a result, there may be a constant or even increased amount of total expenditure (Warner, 1986; USDHHS, 1989; Pollay et al., 1996; Saffer, 1998). A recent analysis of data on 22 Organisation for Economic Co-operation and Development (OECD) countries from 1970-1992 concluded that *comprehensive* bans on advertising/promotions significantly reduce smoking, while limited bans have little or no effect, because of this potential for shifting resources from banned activities to other marketing efforts (Saffer & Chaloupka, in press). Accordingly, there is concern that the potential impact of the MSA billboard advertising ban may be merely to shift tobacco advertising and promotions to other marketing efforts, including those at the point-of-purchase.

This study uses data from a unique national sample of retail outlets to explore the changes in point-of-purchase advertising and promotions across the United States following implementation of the 24 April 1999 ban on billboard tobacco advertising.

Methodology

Sample selection

Data were obtained in 1999 as part of the community data collection activities of ImpacTeen—A Policy Research Partnership to Reduce Youth Substance Use (supported by the Robert Wood Johnson Foundation). The selection of communities was determined by the location of public schools that had been drawn as part of nationally representative samples of students in the eighth, tenth, and twelfth grade levels in the coterminous United States. A multi-stage random sampling procedure was used at each grade level, with the first stage being the selection of particular geographic areas and the second the selection of one or more schools in each area, with probability proportionate to the estimated school size. An additional 30 schools, which were purposively drawn to permit the evaluation of particular school programs, were also included. Overall, 85 eighth grade, 51 tenth grade and 57 twelfth grade school communities were selected, for a total of 193 communities.

For each index school, a catchment area was defined reflecting the area from which the school drew the majority of its student population. Maps of each catchment area were created, and a list of all likely tobacco or alcohol retailers located within the specified census blocks was generated based on retailer self-reported Standard Industrial Classification codes (those retailers who would clearly not sell alcohol or tobacco products were excluded). Up to 30 retail outlets in each community were selected for observation. In areas where the total number of eligible retail outlets was 30 or fewer, all eligible retail outlets were included. If more than 30 outlets were eligible, a random sample of 30 was generated; in addition, two sets of up to 10 alternative retailers were selected for use as replacements, if needed. For 1999, the universe of retailers generated through this process was 4,985 (including the lists of replacement retailers). In addition, if the list of original and replacement retailers did not provide 30 retailers in a given catchment area, field staff were instructed to add any additional retailers selling tobacco and/or alcohol identified in the field. Such “adding” occurred in 62 percent of communities. Field staff were also instructed to add the tobacco and/or alcohol retailer nearest the index school if not previously observed. The range of retailers included in final site observations (n=3,555) varied

from two to 34 retailers, with a mean of 18.4 outlets per community. Of the 3,555 retailers in the final observation sample, 36 were excluded because they did not sell tobacco. A further 55 were excluded due to missing data for control variables, leaving 3,464 tobacco retail stores in 191 communities for analysis.

Data collection

Retailer observations were conducted using trained field staff teams composed of a lead and an assistant observer. The purpose of the retail observations was to unobtrusively collect information on tobacco and alcohol product placement, the extent of related advertising and promotions, and tobacco and alcohol product prices. Observers collected these data during an approximately 10-minute long visit to each selected store. All observations were conducted during the period from 16 February through 23 June 1999.

The levels of interior, exterior and parking lot tobacco advertising were measured using a four-point scale, ranging from no advertising to advertising covering most of the store or storefront. The presence of low-height tobacco ads (at or below 3.5 feet) was noted, and the number of tobacco functional objects, such as shopping baskets, clocks and change mats, was recorded. The presence of a variety of promotions was noted for tobacco (multi-pack discounts, gift-with-purchase, and cents-off). In addition, information was collected on store type (supermarket, pharmacy, convenience store, gas station, and several others), and the number of cash registers was recorded (used as a proxy for store size).

For each community, a variable was added that described its degree of urbanization (obtained from the National Center for Education Statistics). Similarly, a dichotomous variable indicating whether or not the community was located in a state with a statewide tobacco control program was included. States with such programs in the Spring of 1999 were California, Massachusetts, Oregon, Arizona, Florida and Maine. Finally, all models included a dichotomous variable indicating if the observation occurred before or after the billboard advertising ban was implemented.

Statistical analysis

Statistical analysis was undertaken using SAS Version 6.12. Logistic regression analyses were employed to determine the effect of the ban date (before vs. on or after 24 April) on the presence of any interior, exterior and parking lot tobacco advertising, the presence of any tobacco promotions, multi-pack discounts, gift-with-purchase, or cents-off promotions, and the presence of any functional objects. Cumulative logit analysis was used to examine the relationship between the ban date and the extent of interior, exterior and parking lot advertising, as well as the extent of functional objects.

In each analysis, adjustment was made for control variables likely to be independently related to point-of-purchase advertising and promotion. These included the type of store and store size, as well as attributes of the communities in which the stores were located, such as community population density and the presence of a statewide tobacco control program.

In order to retain the highest number of possible cases, analyses excluded only those cases with missing data specific to the model specified. For the analyses using measures of parking lot ads, only gas stations and convenience stores selling gas were included (n=1,454).

Results

Observations were made in 1,484 of the stores (43%) before 24 April 1999, and in 1,980 stores (57%) on or after that date. Table 1 shows that of the 3,464 tobacco retailers, 35 percent were convenience stores that also sold gas, 12 percent were convenience stores only, and 10 percent were drug stores. No other category accounted for more than 10 percent of the sample. Most stores (61%) had only one cash register, indicating they were relatively small in size. Overall, 30 percent of tobacco retailers were located in states with tobacco control programs. The largest percentage of stores (33%) was located on the urban fringe of a large city.

Tobacco advertising and promotions were highly prevalent in retail outlets. Overall, 78 percent of stores had some interior tobacco advertising, 58 percent had some exterior tobacco advertising, and 44 percent had low-height tobacco ads. Of stores selling gas, 40 percent had parking lot tobacco advertising. Overall, 48 percent of stores had some kind of tobacco promotion and 70 percent had tobacco functional objects. In regards to pack placement, 35 percent of stores had packs available in self-service placements (either on counter, off counter in view of clerk, or off counter but not in view of clerk).

Table 2 summarizes the results of logistic regression analyses relating to pack placement. With respect to the placement of cigarette packs, the percentage of stores who positioned packs as self-service (i.e., not clerk-assisted) fell somewhat after the implementation of the ban, but the change was not statistically significant at conventional levels. When examining specific self-service options for pack placements, stores were less likely to have packs off-counter (irrespective of whether they were in the clerk's view) after the ban ($p=.000$). While stores were also slightly more likely to have packs available on the counter, this trend was not statistically significant.

Table 3 summarizes the results of logistic regression and cumulative logit analyses of the relationship between tobacco advertising and promotion variables and date of the ban. With respect to interior store advertising, the frequency of interior advertising of tobacco products increased after the 24 April ban date (OR=1.27, CI 1.06-1.52, $p=.011$).¹ Similarly, there was a

¹ All significance levels are reported after adjustment for covariates.

tendency towards more extensive interior store advertising for tobacco after the billboard advertising ban, but this relationship was not statistically significant ($p=.294$). There was a slight decrease in the percentage of stores that had tobacco ads located three and one-half feet from the ground or lower, but again, this change was not statistically significant ($p=.861$).

Similarly, over the period of observation, the percentage of stores with any exterior store advertising for tobacco increased from 55 to 60 percent. Adjustment for covariates resulted in a statistically significant post-ban increase in the prevalence of exterior tobacco advertising (OR=1.22, CI 1.03-1.44, $p=.019$). There was also an increase in the *extent* of exterior advertising after the billboard ban: 35 percent of stores had a high level of such advertising before the ban, compared with 42 percent afterwards. After adjusting for covariates, a statistically significant increase in the extent of exterior store advertising was observed (OR=1.30, CI 1.12-1.50, $p=.000$). Thus, there were significant increases in both the prevalence and extent of exterior store advertising over the period of observation.

In contrast, there was little change in the prevalence or extensiveness of parking lot tobacco advertising in the stores that sold gas. Slightly fewer of these stores had parking lot advertising after the ban, but the change was not statistically significant ($p=.877$). Similarly, there was an increase in the fraction of these stores with high levels of parking lot advertising, but after controlling for other factors, the overall extensiveness of these ads did not change significantly ($p=.128$).

The percentage of stores with tobacco promotions significantly increased after the ban. Overall, there was an increase in the prevalence of stores with any tobacco promotions from 43 percent of stores before the ban to 52 percent of stores in the period following the ban. After adjustment for covariates, this increase was highly statistically significant (OR=1.65, CI=1.42-1.92, $p=.000$). Multi-pack discount offers were observed in 23 percent of stores before the ban and 27 percent thereafter, a significant increase (OR=1.39, CI 1.17-1.64, $p=.000$). Gift-with-purchase promotions showed a significant increase after the billboard ban date compared with the period beforehand, increasing from four percent of stores to nine percent (OR=2.53, CI 1.83-3.49, $p=.000$). Finally, cents-off promotions increased in prevalence from 32 to 41 percent of stores

over the period, representing a significant increase in this type of promotion (OR=1.65, CI 1.41-1.92, p=.000).

The prevalence of any branded functional objects in stores increased from 66 to 73 percent over the period of observation, which, after adjustment for covariates, represented a significant increase (OR=1.63, CI 1.38-1.92, p=.000). Likewise, the frequency of functional objects observed in stores also increased significantly in the post-24 April period, with the percentage of stores reporting three to four functional objects increasing from 18 to 21 percent, and the percentage of stores reporting five or more functional objects rising from 15 to 18 percent (p=.000).

Discussion

This study of tobacco retail outlets found that compared with the period prior to the billboard ban, the period thereafter evidenced significant increases in (a) the presence of interior store advertising for tobacco products, (b) the presence and extent of exterior store advertising for tobacco products, (c) the presence of a range of cigarette promotions, including gift-with-purchase, cents-off promotions, and multi-pack discounts, and (d) the presence and extent of tobacco-related functional objects.

The observed increases in point-of-purchase advertising and promotions are likely to reflect a response to changes in the regulatory environment for marketing tobacco, particularly the inability of the tobacco companies to advertise on billboards after the 24 April 1999 implementation of the provisions of the MSA. Point-of-purchase marketing organizations have noted that the ban on tobacco billboard advertising is expected to translate into millions of extra dollars in revenue for point-of-purchase marketers, and have already observed large increases in point-of-purchase advertising by Philip Morris (Point of Purchase Advertising Institute (POPAI), 1999). To the extent that this is so, increased point-of-purchase advertising can offset the intended effects of the tobacco billboard advertising ban, consistent with the findings from research on the impact of advertising restrictions on tobacco use (e.g., Saffer & Chaloupka, in press). As long as restrictions on tobacco advertising and promotions in the United States are not comprehensive, significant reductions in the overall extent of such marketing efforts are unlikely to be achieved.

The increase in point-of-purchase advertising is of particular concern from the perspective of those seeking to reduce teenage smoking. There is growing evidence that cigarette advertising and promotions increase youth smoking (Lewit et al., 1981; Pierce et al., 1994; Pierce & Gilpin, 1995; Cummings et al., 1995; Feighery et al., 1998), and that youth are more responsive to cigarette advertising than adults (Pollay et al., 1996). Research shows that tobacco advertising has both predisposing and reinforcing effects on youth smoking, acting as an inducement to experiment with smoking and reinforcing continued progression towards regular smoking among those who have already tried (USDHHS, 1994). These effects generally apply after holding constant the established influence of parental, sibling and friend's smoking (Alexander et al.,

1983; Armstrong et al., 1990; Aitken & Eadie, 1990; Aitken et al., 1991; Pierce et al., 1998; Unger and Chen, 1999; Biener and Siegel, 2000). Further research indicates that the point-of-purchase environment may be an important factor in increasing demand for tobacco among adolescents, since three out of four teenagers visit a convenience store at least once per week (POPAI, 1992).

High levels of exposure to tobacco advertising and promotions are likely to influence adolescent tobacco-related perceptions and behaviors. For example, compared with students who saw pictures of stores with no tobacco advertising, students exposed to photographs of stores with tobacco ads (a) perceived significantly easier access to tobacco, (b) believed more peers tried and approved of smoking, and (c) expressed weaker support for tobacco control policies such as regulating advertising and increasing the price of cigarettes (Henrickson, 1999). Similarly, in a merchant intervention study in Baltimore, Maryland, stores with exterior cigarette advertising containing youthful looking models were more likely to have youth attempt cigarette purchases than those without similar ads (Voorhees et al., 1998). Furthermore, a 1994 study of seventh graders in California reported that seeing tobacco marketing in stores increased the likelihood of experimental smoking by 38 percent after taking into consideration other peer and family influences and other tobacco marketing influences (Schooler et al., 1996). These research studies suggest that the point-of-purchase environment may have important influences on youth in terms of making tobacco use seem normative and, ultimately, increasing the likelihood of taking up smoking.

In conclusion, there is evidence that point-of-purchase advertising and promotions have increased since the 24 April 1999 implementation of the MSA ban on billboard tobacco advertising. This increase, at least in part, is likely to have resulted from the shifting of resources once spent on billboard advertising to other marketing efforts. The shift in advertising expenditure is likely to mean that the intended effect of the billboard advertising ban may not be realized, since overall exposure to advertising and promotions, including for youth, may not be reduced. Further research is needed to examine the impact of the billboard tobacco advertising ban and other restrictions on cigarette marketing contained in the MSA on tobacco company marketing strategies and on youth and adult smoking.

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Table 1. Characteristics of Communities and Retailers

	(N=3,464) % of Retailers
<u>Population Density</u>	
Large city	16.3
Mid-size city	11.0
Urban fringe, large city	33.0
Urban fringe, mid-size city	12.7
Large/small town	15.9
Rural	11.1
<u>Tobacco Control</u>	
States without programs	70.5
States with programs*	29.5
<u>Store Type</u>	
Convenience	12.4
Convenience/gas	34.5
Gas stations	7.5
Mom/pop stores	3.3
Grocery stores	9.1
Supermarkets	9.1
Drug stores	9.6
Liquor stores	8.5
Tobacco stores	2.0
Other	4.0
<u>Store Size</u>	
1 register	61.0
2 registers	17.2
3+ registers	21.8

* AZ, CA, FL, MA, ME, OR

Table 2. Regression Analyses: Association of Tobacco Placement Variables with Date of Ban

Dependent Variable*	N	% Pre-Ban	% Post-Ban	Unadjusted OR (95% CI)	p	Adjusted OR (95% CI)	p
Any self-service placement, packs**	3,404	36.6	33.0	0.85 (0.74, 0.98)	.029	0.89 (0.76, 1.04)	.131
On counter	3,428	26.5	28.2	1.09 (0.94, 1.27)	.259	1.11 (0.94, 1.31)	.220
Off counter, in clerk's view	3,428	15.1	7.3	0.44 (0.35, 0.55)	.000	0.50 (0.39, 0.63)	.000
Off counter, not in clerk's view	3,428	4.1	1.9	0.45 (0.30, 0.68)	.000	0.43 (0.27, 0.67)	.000

* Column percentages do not add to 100, since each placement type is compared with all other placement options.

** The N for any self-service placement excludes vending machine and "other" placements, as these cannot clearly be defined as either self- or clerk-assisted.

Table 3. Regression Analyses: Association of Tobacco Advertising and Promotion Variables with Date of Ban

Dependent Variable	N	% Pre-Ban	% Post-Ban	Unadjusted OR (95% CI)	p	Adjusted OR (95% CI)	p
Interior ads, any vs. none	3,425	76.0	79.6	1.23 (1.05, 1.45)	.012	1.27 (1.06, 1.52)	.011
Interior ads	3,425			1.09 (0.95, 1.25)	.210	1.08 (0.94, 1.25)	.294
Free of any ads		24.0	20.4				
Ads limited to where sold		57.5	62.1				
High levels of ads*		18.6	17.6				
Exterior ads, any vs. none	3,402	55.2	60.0	1.22 (1.06, 1.40)	.005	1.22 (1.03, 1.44)	.019
Exterior ads	3,402			1.29 (1.13, 1.46)	.000	1.30 (1.12, 1.50)	.000
Free of any ads		44.8	40.1				
<5 ads, each <1' any dimension		20.3	17.5				
High levels of ads**		34.9	42.4				
Parking lot ads, any vs. none	1,421	41.1	39.8	0.95 (0.76, 1.17)	.614	1.02 (0.81, 1.27)	.877
Parking lot ads	1,421			1.10 (0.89, 1.35)	.395	1.19 (0.95, 1.47)	.128
Free of any ads		58.9	60.3				
<5 ads, each <1' any dimension		15.6	6.2				
High levels of ads**		25.5	33.6				
Low-height tobacco ads	2,647	44.3	43.2	0.96 (0.82, 1.12)	.582	1.02 (0.86, 1.20)	.861
Promotions, any vs. none	3,415	43.3	52.1	1.42 (1.24, 1.63)	.000	1.65 (1.42, 1.92)	.000
Promotions, specific types							
Multi-pack promotions, 1+	3,425	23.4	27.2	1.22 (1.04, 1.43)	.013	1.39 (1.17, 1.64)	.000
Gift w/ purchase promotions, 1+	3,424	3.8	8.5	2.38 (1.74, 3.25)	.000	2.53 (1.83, 3.49)	.000
Cents off promotions, 1+	3,416	32.3	40.5	1.43 (1.24, 1.65)	.000	1.65 (1.41, 1.92)	.000
Functional objects, any vs. none	3,436	65.9	72.8	1.38 (1.19, 1.60)	.000	1.63 (1.38, 1.92)	.000
Functional objects	3,436			1.36 (1.20, 1.54)	.000	1.57 (1.38, 1.79)	.000
None		34.1	27.3				
1-2		33.7	33.6				
3-4		17.7	20.9				
5+		14.6	18.2				

* "High" interior refers to a combination of both "has ads in sections of the store distinctly separate from where product sold" and "has ads covering almost all available space throughout the store."

** "High" exterior or parking lot refers to a combination of both "less than 5 ads, but one or more is larger than 1 foot in any dimension" and "has 5 or more ads."

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